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Figure 1 is a block diagram of a control system for an internal combustion engine. The diagram shows a sequence of control blocks: 1. Input signals (Vs, Sb, α , Mp, Nout, A/F, Tin, Tex, Tw, K) enter the system. 2. CYLINDER-SPECIFIC COMBUSTION STATE ESTIMATING MEANS receives Ne and Pe. 3. FUEL INJECTION CONDITION/VARIABLE VALVE CONDITION SETTING MEANS receives input from block 2. 4. GEAR RATIO SETTING MEANS receives input from block 3. The output of block 4 is sent to a mechanical system (17) which includes a throttle valve (19) and a pedal (20). The mechanical system also receives input from block 2. The diagram includes various numbered components (1-20) and labels for different parts of the engine and control system.

FIG. 1 is a perspective view of a first substrate 5 supported by a first support 12a on a base 12b. The substrate 5 has a top surface 5a and a bottom surface 5b.

A graph showing the relationship between Output Voltage and Frequency [kHz]. The vertical axis is labeled 'OUTPUT VOLTAGE' and the horizontal axis is labeled 'FREQUENCY [kHz]'. The curve starts at a low voltage and increases monotonically, showing a slight change in slope around 10 kHz.

A graph showing Cylinder Pressure (Y-axis) versus Crank Angle deg. ATDC (X-axis). The curve represents the combustion pressure. A vertical dashed line marks the 'TOP DEAD CENTER'. A shaded vertical region indicates the 'PEAK TIMING' interval. The 'PEAK VALUE' is indicated by a horizontal dashed line from the peak of the curve to the Y-axis. A large arrow points to the right, indicating the direction of crank rotation.

Figure 1 is a graph showing the relationship between Output Value (Y-axis) and Crank Angle deg. ATDC (X-axis). The graph illustrates the peak value and peak timing of the output signal. The X-axis is marked with 'TOP DEAD CENTER' and '10°'. The Y-axis is labeled 'OUTPUT VALUE'. A dashed line indicates the 'PEAK VALUE' and a solid line indicates the 'PEAK TIMING'. A shaded rectangular region highlights the area around the peak, with a width of 10 degrees.

FIG.3

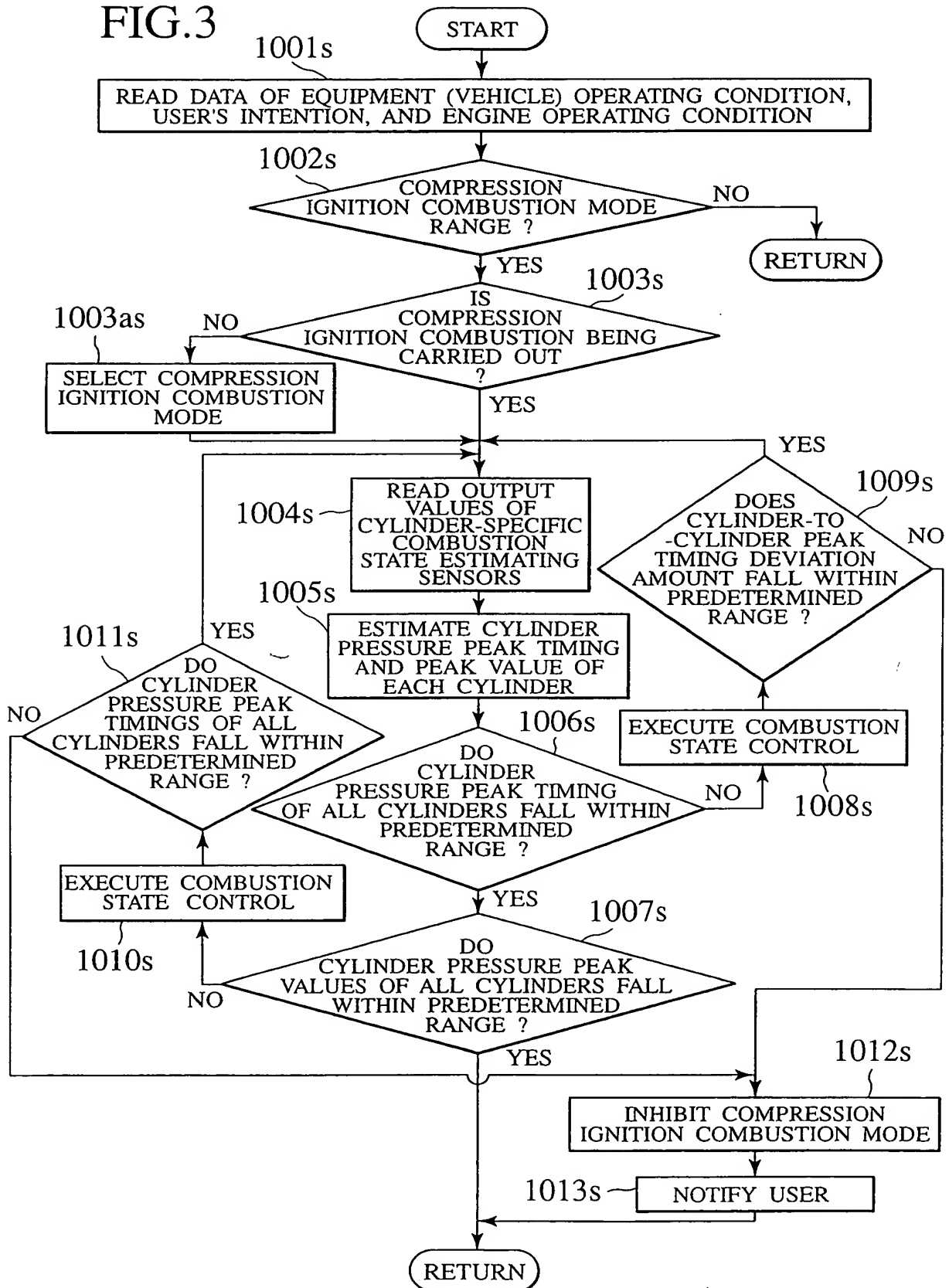


FIG.4

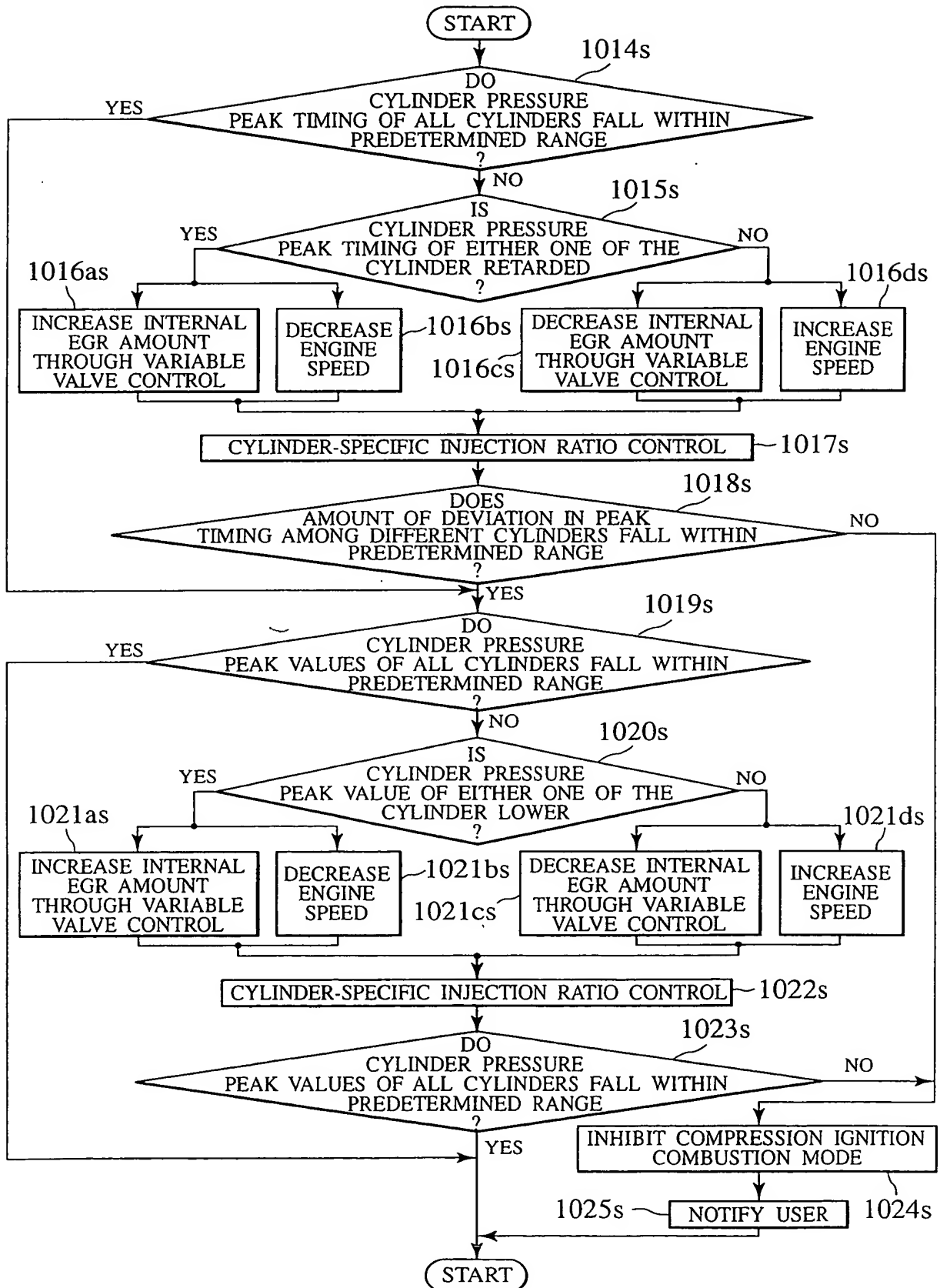


FIG.5

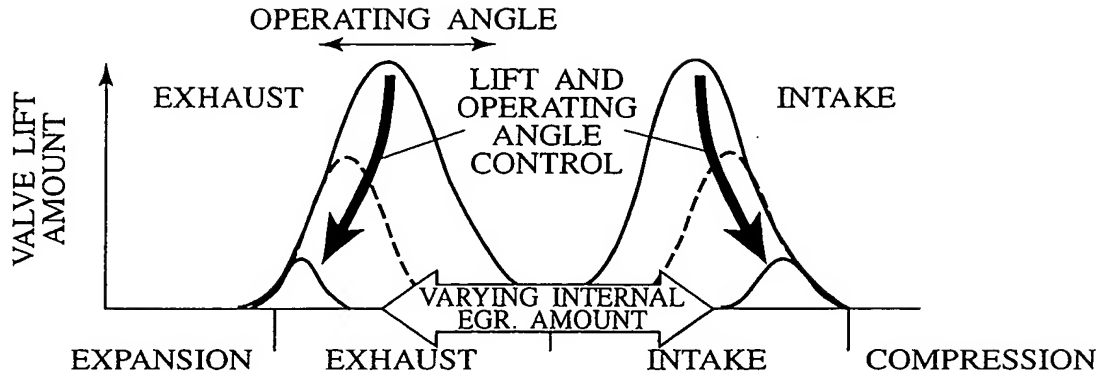


FIG.6A

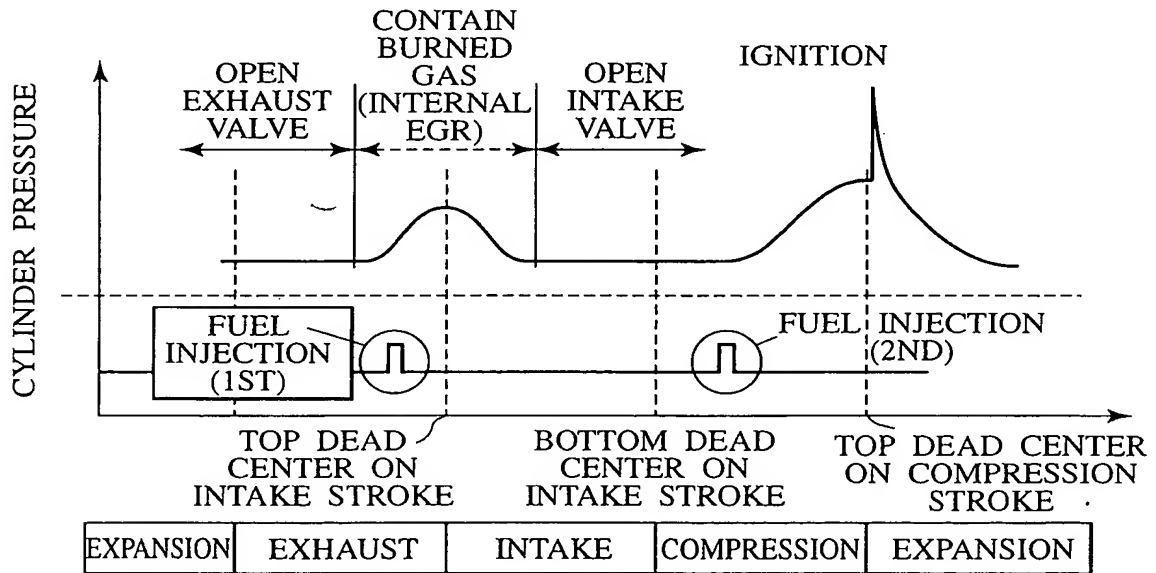


FIG.6B

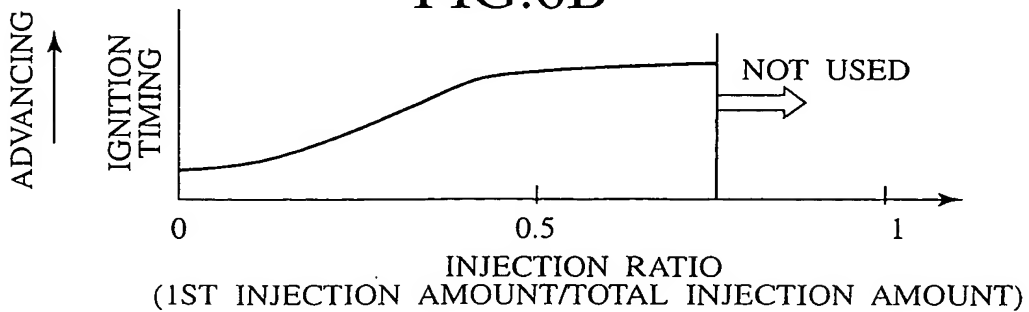


FIG.7A

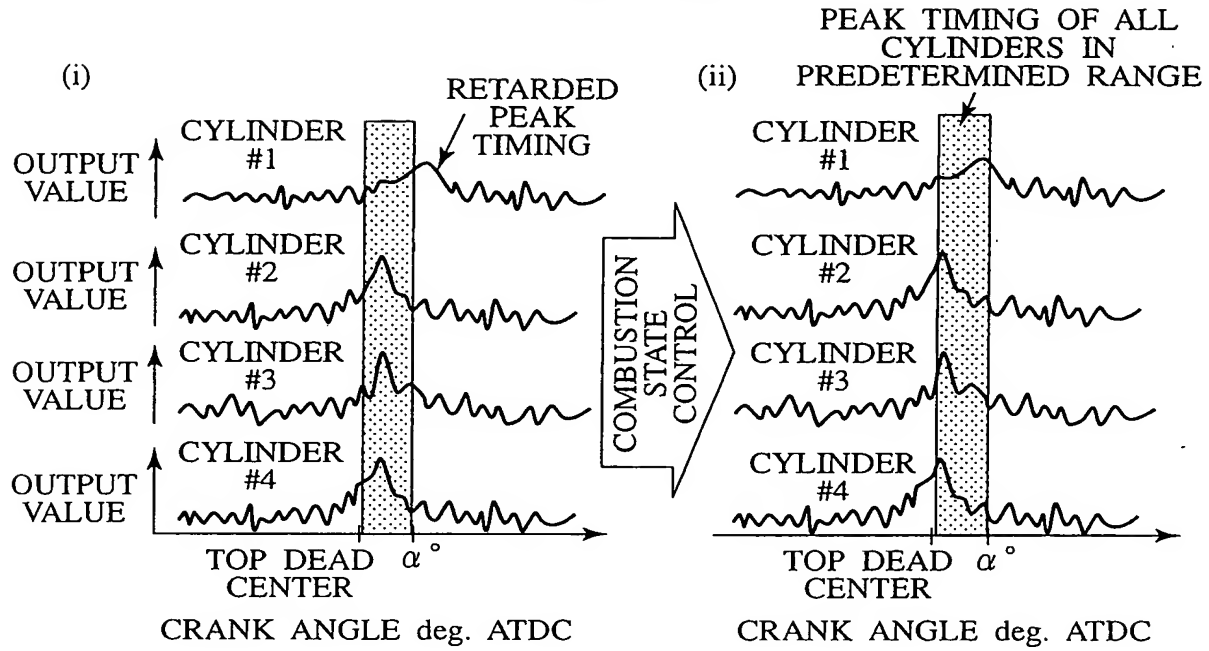


FIG.7B

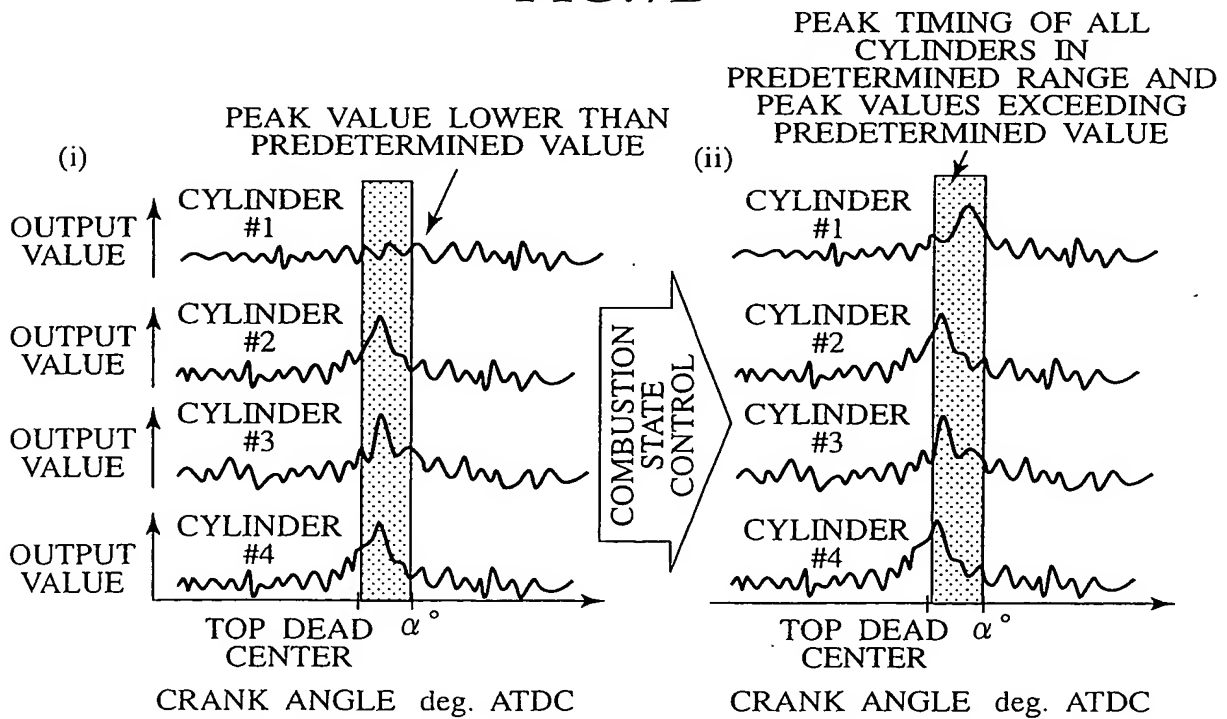


FIG.8

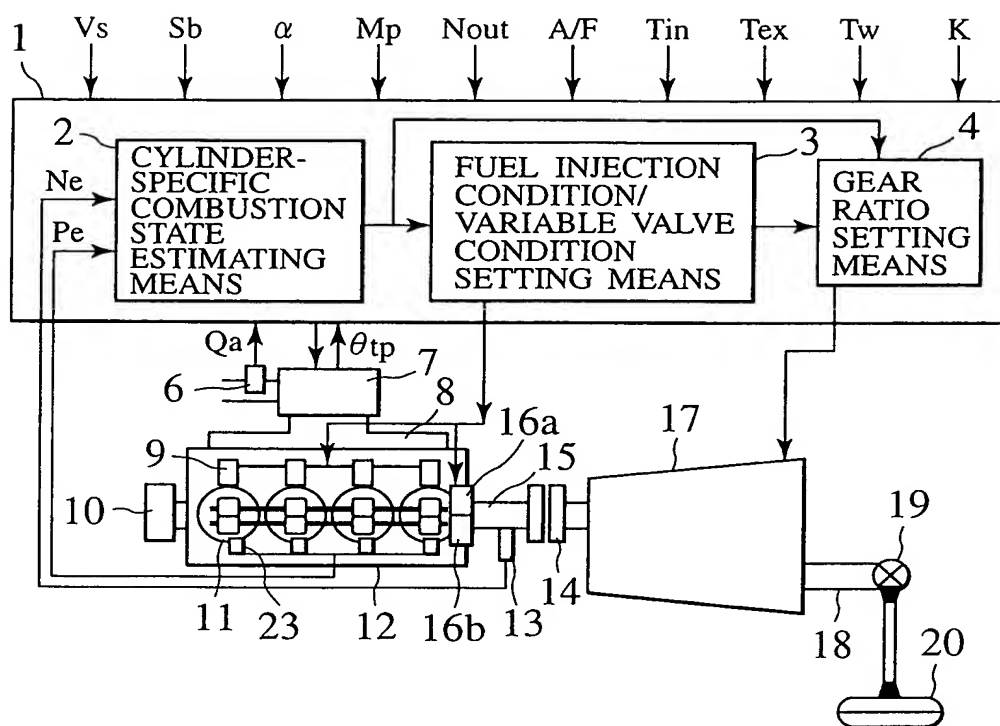


FIG.9

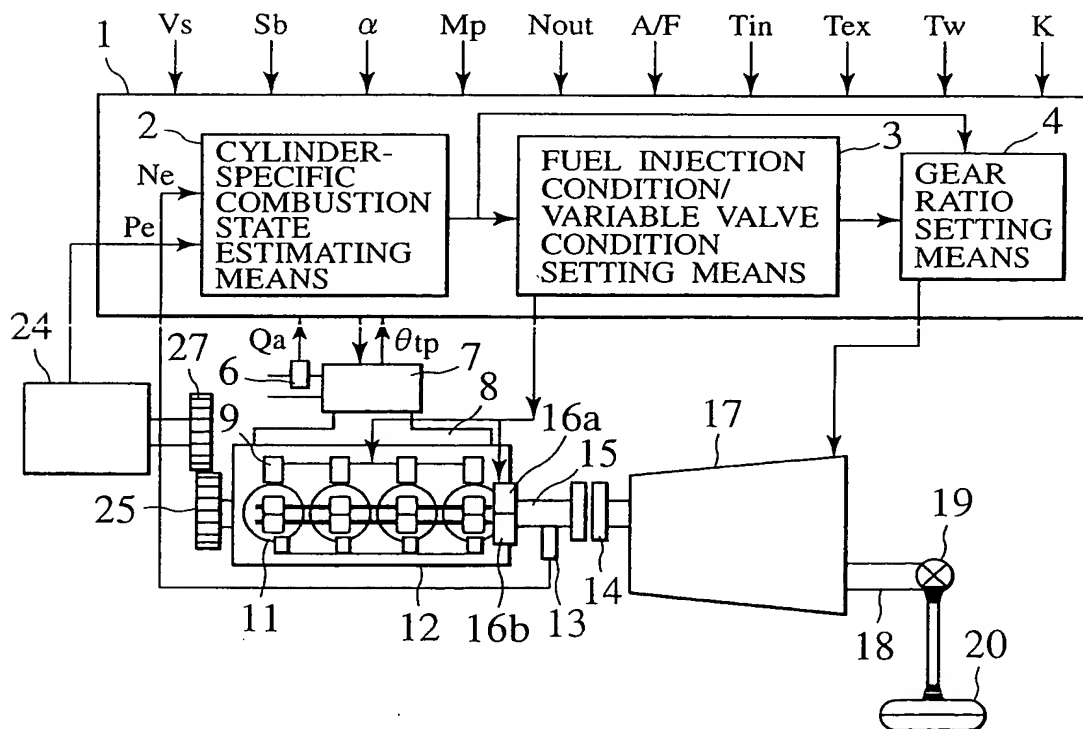


FIG. 10

